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438 489 30 per cent by water.[50] Shanghai was thus in a relatively favorable position in being able to draw its coal supplies so largely over water routes. For the period 1930 to 1936, the city imported an annual average of 3.9 million tons of coal from all sources combined.[51] Figures of the Maritime Customs at Shanghai for the same period show an annual average of 3.5 million tons of coal arriving in the city by sea and river [52] (so that railway haulage accounted for less than 10 per cent). Even so, the distances separating Shanghai from its sources of coal made domestic coal more expensive there than for instance in Tientsin, where the cost of Kaiping coal was about 10 per cent less than in Shanghai. Shansi coal, selling for CNC$5 per ton at the pit-head, sold after its long rail haul for CNC$10 at Taku and CNC$12 per ton at Shanghai.[53] (Note that the price doubled between the mines and Taku, but increased by only 20 per cent between Taku and Shanghai, more than twice as long a haul, but by sea rather than by rail.) Shanghai has the advantage of central location, and can draw with equal ease on domestic or overseas coal as prices vary.

375 Consumption of coal in the city, according to C. A. Bacon, was divided approximately as shown below.[54]

Users	*Approx. Annual Consumption, in Tons*	
Public Utilities	1,475,000	
electric power companies		1,300,000
gas works		100,000
waterworks		75,000
Other Industries	1,100,000	
Households	500,000	
Shipping	400,000	
Railways	350,000	
Miscellaneous	50,000	
TOTAL	3,875,000	

365 According to these figures, 37 per cent of Shanghai's coal consumption was accounted for by the electric power companies. There were four of these companies in the 1930's, of which the Shanghai Power Company (sold by the Shanghai Municipal Council to an American company in 1929, and in 1949–50 taken over by the Com-

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munist government) was by far the largest. An official of the company estimated that it was responsible for an average of 83 per cent of the total sales of electric power in Shanghai for the period 1925–1934, and that 78 per cent of its sales during this period were to industrial users, distributed as shown in the accompanying table.[55]

Industry	*Percentage of Total Industrial Power Sales*
cotton mills	78
flour mills	7
rubber goods factories	2
miscellaneous textiles	2
other industries (less than 1 per cent each)	11
	100

The city's dominant industry, cotton textiles, was thus apparently heavily dependent on rented electric power. All of the five power plants in Shanghai were entirely carbo-electric. The Shanghai Power Company operated two plants, one at the northeastern tip of Yangtzepoo (the "Riverside" plant), and the other near the mouth of Hongkew Creek (map 3). Of the other three plants, one was owned by the French Municipality and was located on Siccawei Creek at the southern edge of the French Settlement, and two were Chinese-owned, located respectively in Nantao and Chapei. The silk-reeling industry does not appear in the above table because it used primarily steam power (and steam heat), which was produced on the factory premises from coal. Approximately 80 per cent of the industrially-used electric power was purchased from the power companies, and only about 20 per cent was generated by the industrial consumers themselves. Fully half of this 20 per cent was accounted for by the generators of the Kiangnan Arsenal.[56]

Shanghai produced in 1936 58 per cent of the electric power generated in China, and the "Riverside" plant of the Shanghai Power Company had a larger output in 1930 (450 million kilowatt-hours) than any single station in England.[57] The combined output of all four power companies in 1930 was greater than in any English city except London.[58] This power was sold at very low rates, special rate arrangements being made for large industrial users.

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365 Rates during the period 1926–30 averaged for all users the equivalent of US$.008 (.025 taels) per kilowatt-hour, which the president of the Shanghai Power Company claimed made his product the world's cheapest power.[59] These rates were made possible, in spite of the higher price of domestic coal in Shanghai than in Tientsin, by the very high and constant annual 24-hour load factor, which averaged nearly 70 per cent during the period 1930 to 1936, as compared with 42, 26, and 40 per cent respectively for Manchester, Birmingham, and Liverpool during the same period.[60]

365 466 The load factor reflects a high intensity of industrial operation, and a heavy dependence of Shanghai manufacturing on electric power purchased from the power companies. It also reflects the long working hours of nearly all manufacturing establishments in Shanghai, which averaged between 11 and 12 hours a day six days a week,[61] and the widespread Sunday and night-time operation among nearly all of the household and smaller-scale manufacturing establishments using electric power. The low power rates encouraged the spread of small-scale mechanized manufacturing in private houses, and more important, made Shanghai an attractive location for almost every form of manufacturing.

365 The case of electric power demonstrates again the role of the Shanghai market in locating industry there. While coal was relatively easily and cheaply obtainable in Shanghai, it was even cheaper in Tientsin, yet rates for electric power produced from coal in Shanghai were among the lowest in the world. The availability of cheap power must be counted one of the outstanding advantages of Shanghai for manufacturing. Power was cheap because water transport made a flexible and reasonably priced coal supply possible at all times short of war in the Pacific, and because the volume of industry already attracted to the Shanghai market by its transport connections, and dependent on rented electric power, made for a load factor which kept power rates exceedingly low.

Factory Location

361 As if to demonstrate a basic reason for its presence there, manufacturing within Shanghai is closely oriented to waterways, as map 3 will illustrate. Manufacturing came relatively late in the

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done with dispatch soon after Shanghai had been taken. By the end of 1949, railways destroyed in the delta area during the civil war had been restored to operation, and by the end of 1950, most of the lines in China as of 1936 had been rebuilt, plus considerable new mileage. Great stress has also been put on maintaining a high level of commodity flow by water transport from the Yangtze and the delta to Shanghai. Numerous hydraulic improvements were undertaken in 1949, 1950, and 1951, including the widening, deepening, and regulating of existing waterways, the building of additional carriers of all types,* and in November 1950 the commencement of a very large five-year project for the regulation of the Huai River, designed primarily to prevent its disastrous floods, but also to facilitate navigation.[2]

But the sea routes, equally vital to the city's economic life, remain largely closed. Political capital has been made of this unfortunate situation, since it has in effect called the Communists' bluff in their repeated assertions that Shanghai was a foreign sore on the Chinese body politic and should be integrated with China rather than with its kindred economies overseas.

> The new Shanghai . . . is closely linked by commerce and the interflow of goods with the rest of the country. Facing inland instead of across the sea, it is integrated politically, economically, and culturally with the nation whose needs it serves. From being a source of infection in China's economic life, Shanghai has today become a source of strength to the new China.[3]

This is cold comfort. Shanghai can be a source of strength to China only if it produces, and it cannot reach more than a part of its industrial potential while the sea routes which feed it are closed. The shortage of coal in the city remains, if one may read between the lines of official statements and news releases. Electric power is rationed; new users are discouraged, and one gathers that current users are unable to get enough to increase their production. Remembering the crucial importance of cheap and abundant electric power for all of the city's industry, as we have discussed it above

* 192 inland water craft were built in Shanghai alone in 1950, totalling 28,000 tons displacement, according to Ching-Chi Chou-Pao for January 4, 1951, p. 9.

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in Chapter Ten (it constituted probably Shanghai's outstanding advantage for manufacturing), the present situation is discouraging. We may assume that the newly rebuilt railways are now carrying much larger amounts of coal from north China to Shanghai than they did before the war, but this greatly increases its price as against sea shipment, and is unlikely to have the necessary capacity. Industrial machinery, liquid fuels, rubber, chemicals, and the other goods which were imported from overseas and which are vital to Shanghai's industrial recovery are also short under the combined Nationalist blockade and United Nations embargo.

Ocean shipping using the port virtually disappeared during 1949 and most of 1950. Toward the end of 1950 it reappeared on a very small scale, and now averages perhaps two or three ships a month, all in the coasting trade. The entrances to the Yangtze have been mined by the Nationalists, and the main ship channel in the estuary has not been dredged since 1937. Sunken ships, to which floating mines still occasionally add, further block the river. Until early 1951 there was a small trade with Hong Kong, but this has now nearly disappeared with the adoption of the United Nations embargo in December 1950, and the few ships which call at Shanghai are restricted almost entirely to the trade with Tientsin, Tsingtao, and Dairen. Rates are prohibitively high, and all imports and exports through the port of Shanghai are rigidly controlled by the government. Luxury goods and most consumers' goods are excluded from the list of admissable imports. The city's busses and most of its other gasoline vehicles have been converted to run on charcoal gas. Export and import licenses can be obtained only where it is considered in the national interest, but buyers to whom exports might be sent are in many cases unreachable, as witness the consistent import surplus for Shanghai itself of 100 to 120 per cent over exports during 1951.* [4] Such conditions are crippling for a city which

* The Soviet bloc however seems now to be filling the gap in China's foreign trade left by the shrinking of commercial relations with the West, judging from current reports. (See Ch'en Han-seng, "The Future of China's Foreign Trade" (1952), *New China News Agency Bulletin*, September 29, 1951, *Hsin-Hua Yüeh-Pao*, October 1951, *Ching-Chi Chou-Pao*, September 27, 1951 and April 24, 1952, *Peoples' China*, August 1, 1952.) But for trade with the Soviet bloc, though it is still a new development whose permanent outlines are uncertain, Shanghai is in a relatively